ECON 120 - Regulation & Antitrust Policy
Drake University, Spring 2017
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EXAMINATION 2 VERSION B
"Antitrust Theory"
March 7, 2017

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Mobile phones or other wireless devices are NOT permitted. Fractional answers are acceptable. Decimal answers, if rounded, must be correct to at least three significant digits. Points will be subtracted for illegible writing or incorrect rounding. Point values for each question are noted in brackets.

I. Multiple choice: Please circle the one best answer to each question. [1 pt each, 16 pts total]

(1) A "natural monopoly" is a firm that enjoys
a. an exclusive government franchise allowing it alone to sell the product.
b. exclusive ownership of a natural resource essential for producing the product.
c. a downward-sloping average cost curve.
d. patent protection.

(2) For a monopolist, marginal revenue is always
a. less than price.
b. greater than price.
c. equal to price.
d. zero.

(3) In the "Structure-Conduct-Performance" paradigm, "Performance" does not include
a. deadweight loss.
b. concentration.
c. technical efficiency.
d. technical progress.

(4) In the United States, "monopolization" is illegal under the
a. Sherman Act Section 1.
b. Sherman Act Section 2.
c. Clayton Act.
d. Federal Trade Commission Act.

(5) An action by firms that is judged under the "rule of reason" is
a. may be illegal if it appears to lessen competition.
b. may be illegal if it increases the firm's profit.
c. may be illegal if it decreases other firms' profits.
d. always illegal regardless of circumstances.

(6) When private parties win lawsuits under U.S. antitrust laws, damages are automatically multiplied by
a. one-half.
b. two.
c. three.
d. ten.

(7) The Cournot model of duopoly assumes that each firm maximizes its profit while taking the other firm's
a. cost as given.
b. output quantity as given.
c. price as given.
d. all of the above.

(8) One implication of the Cournot model of oligopoly is that the equilibrium price is higher
a. the more firms are in the industry.
b. the more elastic is market demand.
c. both of the above.
d. none of the above.

(9) According to the Cournot model of oligopoly, if firms have different marginal costs, then the firm with the highest marginal cost has the
a. smallest market share.
b. largest market share.
c. same market share as all other firms.
d. lowest price.

(10) After firms agree to maximize their joint profits, each firm will have an incentive to cheat on any agreement by quietly
a. lowering its output level.
b. lowering its price.
c. raising its price.
d. none of the above.

(11) Suppose firms in a cartel use a "trigger strategy" to enforce discipline. If cheating is detected, then these firms will all
a. halt production.
b. raise their prices.
c. lower their prices.
d. decrease their output.

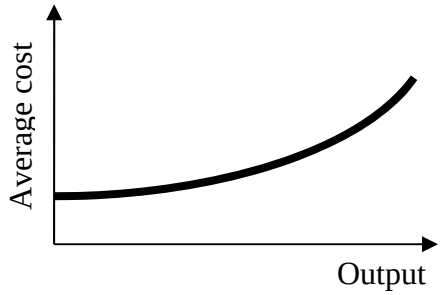
(12) Which market model predicts the highest equilibrium price?
a. Price competition.
b. Collusion to maximize joint profits.
c. Cournot oligopoly.
d. All models predict the same equilibrium price, if all use the same assumptions about market demand and marginal cost.

(13) Under U.S. law, price-fixing is illegal
a. if price is raised significantly above marginal cost.
b. *per se*, except in industries Congress has exempted.
c. if total market quantity is reduced significantly below the competitive quantity.
d. if significant deadweight loss can be shown.

(14) Consider an industry that behaves like a Cournot oligopoly. Holding constant the industry elasticity of demand, the Lerner index (or price-cost margin) is
a. zero, as in all Cournot oligopolies.
b. positive but constant because it depends only on the industry's elasticity of demand.
c. positively related to the industry's HHI.
d. negatively related to the industry's HHI.

(15) Which hypothesis claims that higher industry concentration is *not* associated with a loss of social welfare?
a. collusion hypothesis.
b. differential efficiency hypothesis.
c. Both of the above.
d. None of the above.

(16) The average cost curve in the graph below shows
a. economies of scale.
b. diseconomies of scale.
c. neither economies nor diseconomies of scale.
d. Cannot be determined from information given.



II. Problems: Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Monopoly, markup formula, Lerner index: 4 pts] ABC Amusement Park enjoys a local monopoly. Its marginal cost per customer is $12.00. The management believes the elasticity of demand for admissions is -2.5.

a. What admission price should ABC set, to maximize profit?

b. Compute ABC's Lerner index (also called the "price-cost margin" or the "markup ratio").

$

(2) [Measures of concentration: 6 pts] Statistica.com reported that shares in the global LCD TV market in 2015 were as follows.

Samsung	21 %
LG Electronics	12 %
TCL	6 %
Sony	6 %
Hisense	6 %
Skyworth	5 %
AOC/TP Vision	4 %
Panasonic	3 %
Vizio	3 %
Changhong	3 %

The total sums to 69%. Assume the remaining companies are very small and may be ignored in the following calculations.

a. Compute the four-firm concentration ratio.

b. Compute the eight-firm concentration ratio.

c. Compute the Hirschman-Herfindahl Index

%
%

(3) [Cournot duopoly: 14 pts] Suppose a market is served by only two firms: Ames Products Company and Boone Products Company. Suppose the two firms form a *symmetric Cournot duopoly*, each firm setting its own quantity while taking the other firm's quantity as given. Let q_A = Ames's quantity and q_B = Boone's quantity, so that total market quantity $Q = q_A + q_B$. The market demand curve is $P = 20 – (Q/10)$. Each firm has constant marginal and average cost equal to \$2. Circle your final answers. Use the space at the bottom of the next page for scratch work.

a. Find an expression for Ames's revenue, as a function of its own quantity and the quantity produced by the other firm: $Rev_A(q_A,q_B)$. [Hint: By definition, $Rev_A = P\ q_A$. Here, replace P by the equation for the demand curve, and then replace Q by $(q_A + q_B)$.]

b. Find an expression for Ames's marginal revenue, as a function of its own quantity and the quantity produced by the other firm: $MR_A(q_A,q_B)$. [Hint: $MR_A = dRev_A / dq_A$.]

c. Find an expression for Ames's reaction function (or best reply function), showing how much Ames will produce for any given level of quantity set by the other firm: $q_A^* = f(q_B)$. [Hint: Set $MR_A = MC$ and solve for q_A as a function of q_B .]

d. Assume the equilibrium is symmetric (that is, assume $q_A^* = q_B^*$) and compute Ames's equilibrium quantity q_A^*.

Question continues on next page.

e. Compute total market quantity Q* and the equilibrium price P*.

f. Compute the Lerner index of market power [(P-MC)/P].

g. Compute the social deadweight loss from Cournot duopoly.

(4) [Joint profit maximization: 10 pts] Suppose the two firms in the previous problem form a cartel to maximize the sum of their profits. Show your work and circle your final answers.

a. Find the cartel's marginal revenue function.

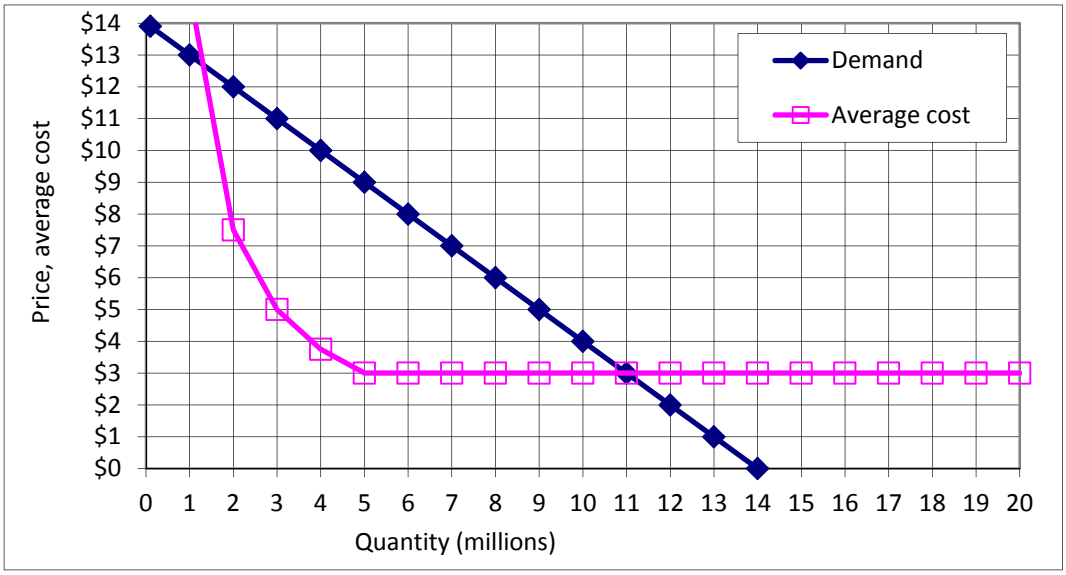
b. Compute the cartel's profit-maximizing level of output Q*.

c. Compute the cartel's profit-maximizing price P*.

d. Compute the cartel's Lerner index of market power [(P-MC)/P].

e. Compute the social deadweight loss from the cartel.

(5) [Entry barriers and contestable markets: 26 pts] The graph below shows a market where the incumbent firm now produces seven million units of output and sets a price of $7. The average cost curve applies to the incumbent and to any other firm that tries to enter this market.



a. What is minimum average cost?	$
b. What is the minimum efficient scale?	million
c. Assume MC=AC and compute the incumbent's Lerner index (or "price-cost margin").	

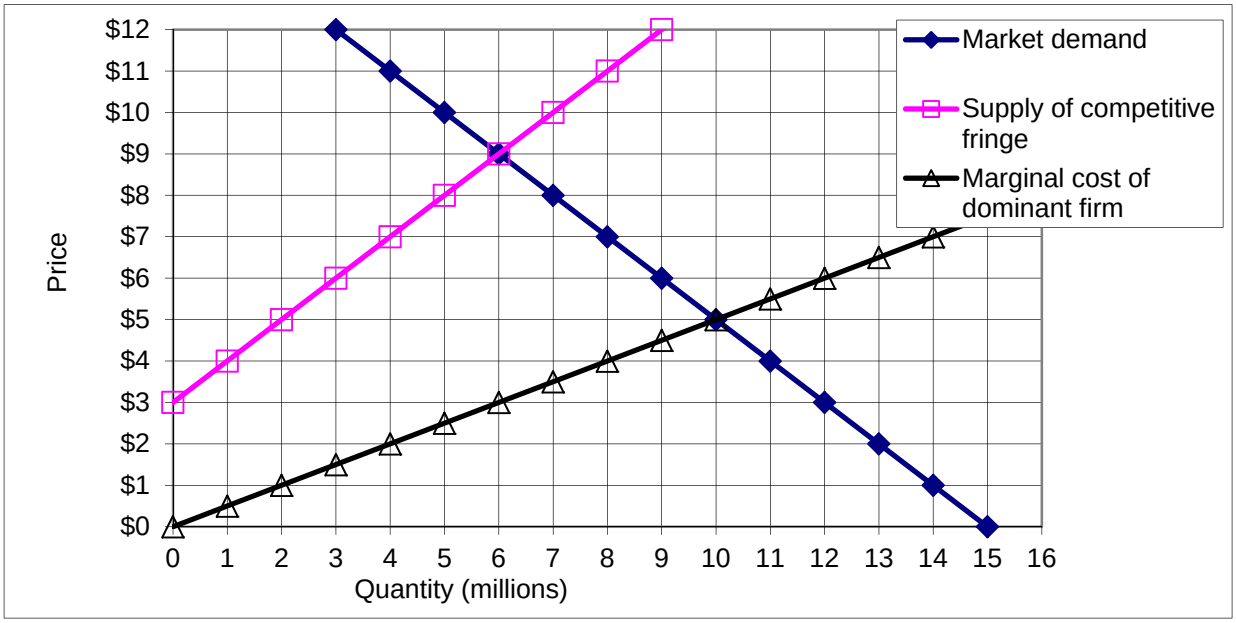
First, suppose a second firm enters the market and produces three million units of output. Assume the Bain-Sylos postulate: the incumbent firm keeps its output level fixed at seven million and lets the market price fall.

d. What is the new market price?	$
e. What is the entrant's average cost?	$
f. Does the entrant make a profit or a loss?	
g. How much?	$ million

Alternatively, suppose a second firm enters the market and offers a price of $6. Do not assume the Bain-Sylos postulate. Instead assume the market is *contestable* and the incumbent firm keeps its price fixed at $7.

h. What is the entrant's quantity?	million
i. What is the entrant's average cost?	$
j. Does the entrant make a profit or a loss?	
k. How much?	$ million
l. What price *should* the incumbent set to prevent entry?	$
m. Compute the incumbent's Lerner index (or "price-cost margin") assuming it sets price as in part (l).	

(6) [Dominant-firm price leadership: 20 pts] Monster Corporation is the dominant firm in its industry. The following diagram shows total market demand, the supply curve of the follower firms or "competitive fringe," and the marginal cost for Monster Corporation. Assume the "competitive fringe" firms take price as given.



a. What is the highest price at which the competitive fringe would supply zero output? $

b. At what price would the quantity supplied by the competitive fringe be sufficient to supply the entire quantity demanded by the market? $

Suppose the dominant firm set a price of **$ 8** for some unknown reason.

c. How much output would the competitive fringe supply? million

d. How much output would be left for the dominant firm? million

Now suppose the dominant firm sets the market price to maximize profit.

e. Using a straightedge, draw and label the *residual demand curve* available to the dominant firm.

f. Using a straightedge, draw and label the *residual marginal revenue curve* available to the dominant firm.

g. What quantity will the dominant firm seek to produce to maximize its profit? million

h. What price will the dominant firm set in the market? $

i. What quantity will the competitive fringe firms supply as a result? million

j. Compute the dominant firm's Lerner index (or "price-cost margin").

III. Critical thinking: Write a one-paragraph essay answering *just one* question below (your choice). Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling. [4 pts]

(1) Consider the fast-food industry.
   a. Define *plant-level economies of scale*. Do you believe fast-food restaurants enjoy these? Why or why not?
   b. Define *firm-level economies of scale*. Do you believe fast-food restaurants enjoy these? Why or why not?

(2) In an example worked in class, a *Cournot duopoly* consisted of two firms. Firm #1's marginal cost was \$4 and Firm #2's marginal cost was \$2. We solved the model to show that Firm #1 would produce 100 units of output and Firm #2 would produce 300 units of output, for a market total of 400 units of output and a price of \$5. Suppose alternatively that Firm #2 enjoyed a *monopoly* in this same market. It can easily be shown that its output would be 350 units and its price would be \$5.50.
   a. Compute the loss of consumer surplus in moving from Cournot duopoly to monopoly.
   b. Compute the gain in total industry profit in moving from Cournot duopoly to monopoly. (Assume marginal cost = average cost for each firm.)
   c. Which is better for society—the *Cournot duopoly* or a *monopoly* by Firm #2?

[end of exam]